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Serial Number: 10/004,002 Filing Date: November 30, 2001

Title: ELECTRONIC PACKAGES HAVING MULTIPLE-ZONE INTERCONNECTS AND METHODS OF MANUFACTURE (as amended)

signee: Intel Corporation

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IN THE CLAIMS

Please amend the claims as shown in the following detailed claim listing. The detailed manufacture listing is intended to reflect cancellation of claims 2-3, 14, 19, 33, 37, and 40; the amendment of previously pending claims 1, 9, 17-18, 28, 31, 36, and 39; and the addition of new claims 43-61. The specific amendments to individual claims are detailed in the following detailed claim listing.

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Title: ELECTRONIC PACKAGES HAVING MULTIPLE-ZONE INTERCONNECTS AND METHODS OF MANUFACTURE (as amended)

Assignee: Intel Corporation

1. (Currently Amended) A method comprising:

forming first and second sets of terminals on a surface of an integrated circuit (IC); aligning the first and second sets of terminals of an integrated circuit (IC) with corresponding third and fourth sets of terminals of a substrate, the first and second sets of terminals being in first and second zones, respectively, of the IC, wherein the first zone is formed in a central region of the surface;

coupling the first and third sets of terminals with a first type of connector; and coupling the second and fourth sets of terminals with a second type of connector.

2-3. (Canceled)

- 4. (Original) The method recited in claim 2, including forming the second zone in a peripheral region of the surface.
- 5. (Original) The method recited in claim 1, wherein coupling the first and third sets of terminals with the first type of connector comprises using solder.
- 6. (Original) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a solderless, compliant, electrically conductive material.
- 7. (Original) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a connector from the group comprising a nanospring, a sea of leads connector, and an interposer.
- 8. (Original) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises physically compressing the IC and the substrate together.

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9. (Currently Amended) A method comprising:

aligning first and second sets of terminals of an integrated circuit (IC) package with corresponding third and fourth sets of terminals of a substrate, the first and second sets of terminals being in first and second zones, respectively, of the IC package;

coupling the first and third sets of terminals with a first type of connector; and coupling the second and fourth sets of terminals with a second type of connector using a solderless, compliant, electrically conductive material.

- (Original) The method recited in claim 9, including forming the first and second sets of 10. terminals on a surface of the IC package.
- (Original) The method recited in claim 10, including forming the first zone in a central 11. region of the surface.
- (Original) The method recited in claim 10, including forming the second zone in a 12. peripheral region of the surface.
- (Original) The method recited in claim 9, wherein coupling the first and third sets of 13. terminals with the first type of connector comprises using solder.

14. (Canceled)

- (Original) The method recited in claim 9, wherein coupling the second and fourth sets of 15. terminals with the second type of connector comprises using a connector from the group comprising a nanospring, a sea of leads connector, and an interposer.
- (Original) The method recited in claim 9, wherein coupling the second and fourth sets of 16. terminals with the second type of connector comprises physically compressing the IC package and the substrate together.

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- 17. (Currently Amended) An electronic package comprising:
- a die comprising first and second sets of terminals disposed in first and second zones, respectively, of the die, the first zone being centrally located on a surface of the die;
 - a substrate comprising third and fourth sets of terminals;
 - a first type of connector to couple the first and third sets of terminals; and a second type of connector to couple the second and fourth sets of terminals.
- 18. (Currently Amended) The electronic package recited in claim 17, wherein the first and second sets of terminals are disposed on the a surface of the die.
- 19. (Canceled)
- 20. (Original) The electronic package recited in claim 17, wherein the second zone is peripherally located on the surface.
- 21. (Original) The electronic package recited in claim 17, wherein the first type of connector comprises solder.
- 22. (Original) The electronic package recited in claim 17, wherein the second type of connector comprises a compliant, electrically conductive material.
- 23. (Original) The electronic package recited in claim 17, wherein the second type of connector is from the group comprising a nanospring, a sea of leads connector, and an interposer.
- 24. (Original) The electronic package recited in claim 17, wherein the second type of connector comprises an interposer, and wherein the electronic package further comprises:

an element to physically compress the die and the substrate together to electrically couple the die to the substrate.

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25. (Original) The electronic package recited in claim 24, wherein the interposer comprises: a flexible support formed of electrically insulating material; and a plurality of elements formed of electrically conductive material.

- 26. (Original) The electronic package recited in claim 17, wherein the second type of connector comprises a compressible element to electrically couple the die to the substrate.
- 27. (Original) The electronic package recited in claim 17, wherein the die further comprises a fifth set of terminals disposed in a third zone of the die, wherein the substrate comprises a sixth set of terminals, and wherein the electronic package further comprises:

a third type of connector to couple the fifth and sixth sets of terminals.

- 28. (Currently Amended) The electronic package recited in claim 27, wherein the second and fifth first, second, and fifth sets of terminals are disposed on a surface of the die, wherein the first zone is centrally located on the surface, wherein the second zone is peripherally located on the surface, and wherein the third zone is located on the surface between the first and second zones.
- 29. (Original) The electronic package recited in claim 27, wherein the first type of connector comprises solder, and wherein the second and third types of connectors comprise compliant material.
- 30. (Original) The electronic package recited in claim 27, wherein the first type of connector comprises solder, and wherein the second and third types of connectors are from the group comprising a nanospring, a sea of leads connector, and an interposer.

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(Currently Amended) An electronic assembly comprising: 31.

an integrated circuit (IC) package comprising first and second sets of terminals disposed in first and second zones, respectively, of a surface of the IC package, the second zone being peripherally located on the surface;

- a substrate comprising third and fourth sets of terminals;
- a first type of connector to couple the first and third sets of terminals; and
- a second type of connector to couple the second and fourth sets of terminals and comprising a compliant, electrically conductive material.
- 32. (Original) The electronic assembly recited in claim 31, wherein the first zone is centrally located on the surface, and wherein the first type of connector comprises solder.
- 33. (Canceled)
- (Original) The electronic assembly recited in claim 31, wherein the second type of 34. connector is from the group comprising a nanospring, a sea of leads connector, and an interposer.
- 35. (Original) The electronic assembly recited in claim 31, wherein the second type of connector comprises an interposer, and wherein the electronic assembly further comprises:

an element to physically compress the IC package and the substrate together to electrically couple the IC package to the substrate.

Title: ELECTRONIC PACKAGES HAVING MULTIPLE-ZONE INTERCONNECTS AND METHODS OF MANUFACTURE (as amended)

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36. (Currently Amended) An electronic system having at least one electronic assembly comprising:

a die comprising first and second sets of terminals disposed in first and second zones, respectively, of a surface of the die, the first zone being centrally located on the surface;

- a substrate comprising third and fourth sets of terminals;
- a first type of connector, comprising solder, to couple the first and third sets of terminals; and
 - a second type of connector to couple the second and fourth sets of terminals.
- 37. (Canceled)
- 38. (Original) The electronic system recited in claim 36, wherein the second zone is peripherally located on the surface, and wherein the second type of connector comprises a compliant, electrically conductive material.
- 39. (Currently Amended) A data processing system comprising:
 - a bus coupling components in the data processing system; and
 - a processor coupled to the bus and including at least one electronic package comprising:
 - a die comprising first and second sets of terminals disposed in first and second zones,

respectively, of a surface of the die, the first zone being centrally located on the surface;

- a substrate comprising third and fourth sets of terminals;
- a first type of connector, comprising solder, to couple the first and third sets of terminals; and
 - a second type of connector to couple the second and fourth sets of terminals.
- 40. (Canceled)
- 41. (Original) The data processing system recited in claim 39, wherein the second zone is peripherally located on the surface, and wherein the second type of connector comprises a compliant, electrically conductive material.

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42. (Original) The data processing system recited in claim 39 and further comprising: a display coupled to the bus; and external memory coupled to the bus.

- 43. (New) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a nanospring.
- 44. (New) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a sea of leads connector.
- 45. (New) The method recited in claim 1, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using an interposer.
- 46. (New) The method recited in claim 9, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a nanospring.
- 47. (New) The method recited in claim 9, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using a sea of leads connector.
- 48. (New) The method recited in claim 9, wherein coupling the second and fourth sets of terminals with the second type of connector comprises using an interposer.
- 49. (New) The electronic package recited in claim 17, wherein the second type of connector comprises a nanospring.
- 50. (New) The electronic package recited in claim 17, wherein the second type of connector comprises a sea of leads connector.

51. (New) The electronic package recited in claim 17, wherein the second type of connector comprises an interposer.

- 52. (New) The electronic package recited in claim 27, wherein the second and third types of connectors are from the group comprising a nanospring and a sea of leads connector.
- (New) The electronic assembly recited in claim 31, wherein the second type of connector 53. comprises a nanospring.
- 54. (New) The electronic assembly recited in claim 31, wherein the second type of connector comprises a sea of leads connector.
- 55. (New) The electronic assembly recited in claim 31, wherein the second type of connector comprises an interposer.
- (New) The electronic system recited in claim 36, wherein the second type of connector 56. comprises a nanospring.
- (New) The electronic system recited in claim 36, wherein the second type of connector 57. comprises a sea of leads connector.
- 58. (New) The electronic system recited in claim 36, wherein the second type of connector comprises an interposer.
- 59. (New) The data processing system recited in claim 39, wherein the second type of connector comprises a nanospring.
- 60. (New) The data processing system recited in claim 39, wherein the second type of connector comprises a sea of leads connector.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111 Serial Number: 10/004,002

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(New) The data processing system recited in claim 39, wherein the second type of 61. connector comprises an interposer.